

WWAN Antenna Regulatory Information

Platform	
Platform Owner	Dell Inc.
Brand Name	Dell
Marketing Model Name	Latitude 2110
Regulatory Model Name	Motts / ZM2
ODM	Quanta Computer Inc.
Target Launch Date	
Antenna	
Brand Name	YAGEO
Part Number	■ Tx1 Antenna: DQ643139W24 (WWAN Main)
	■ Tx2 Antenna: DQ643139W24 (WWAN Aux)
Module	
With WLAN Module	■Ericsson (DW5540)
(Check Box)	

Company YAGEO Co., Ltd

Address	16, West 3rd Street, N.E.P.Z , Kaohsiung, 811 Taiwan, R.O.C
Tel	+886-7-361-4101
FAX	+886-7-962-7991
Web	www.yageo.com

Antenna Type(Material, Technology)		Metal, Modified PIFA	
Antenna Model Number		CAN43139WWQU01071 (WWAN Main)	
		CAN43139WWQU01071 (WWAN Aux)	
Operating Frequency Range		Low Band: 824MHz ~ 960MHz	
		High Band: 1710MHz ~ 2170MHz	
Peak Gain (dBi)	Low Band 824 ~ 960MHz	WWAN Main	0.87 dBi
		WWAN AUX	-1.36 dBi
	High Band 1710 ~2170MHz	WWAN Main	0.08 dBi
		WWAN AUX	1.17 dBi
Radio	Manufacturer/Type	Hirose,U.FL-LP(P)-088,U.FL-LP(P)-066 U.FL-LP(P)-088A	
Connector	Part Number	Technova,7000AC-000-1R0 , 7001A2-000-1R0	
		I-Pex, 20351-112R-37 , 20278-112R-13	
Mid-Line Connector Type (If Applicable)		N/A	

1. Specifications

Antenna Specifications

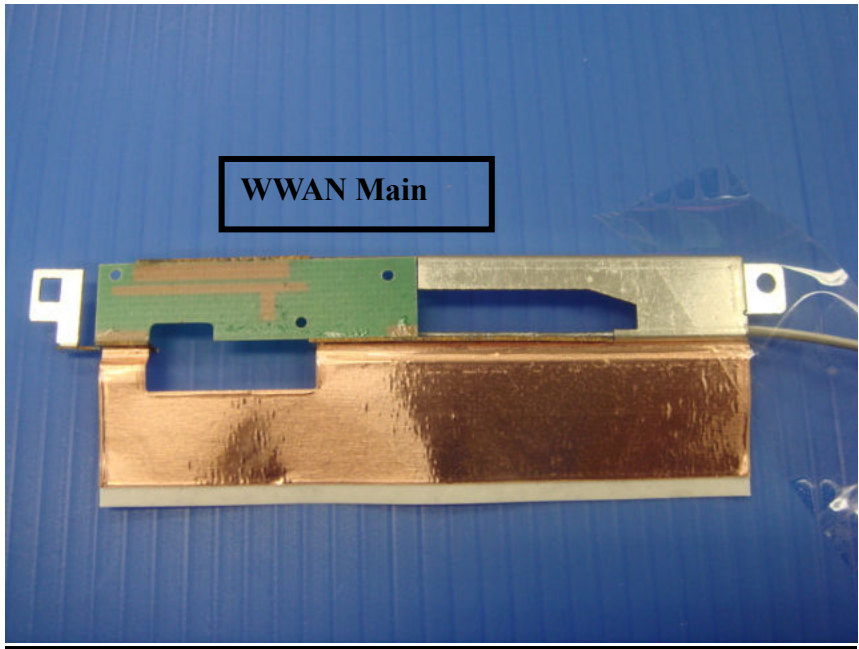
Remark: Peak Gains include all system losses (connector, cable, etc)

Cable Specifications

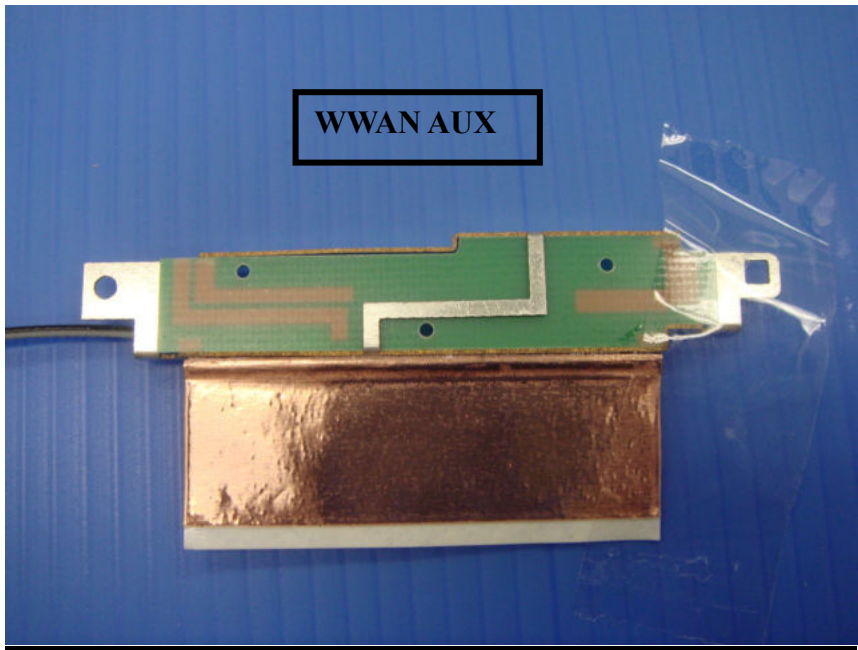
Cable Parameters		WWAN Main		WWAN Aux	
Length (mm)		379 mm		604 mm	
Loss (Including Connectors)		0.9GHz	0.60 dB	0.9GHz	0.97 dB
		2.0GHz	0.94 dB	2.0GHz	1.50 dB
Description	Color	White/Gray		Black/Gray	
	Diameter	1.13 mm		1.13 mm	
	Manufacturer	Dell approved cable manufacturer		Dell approved cable manufacturer	

WWAN Main Antenna Dimensioned Drawing



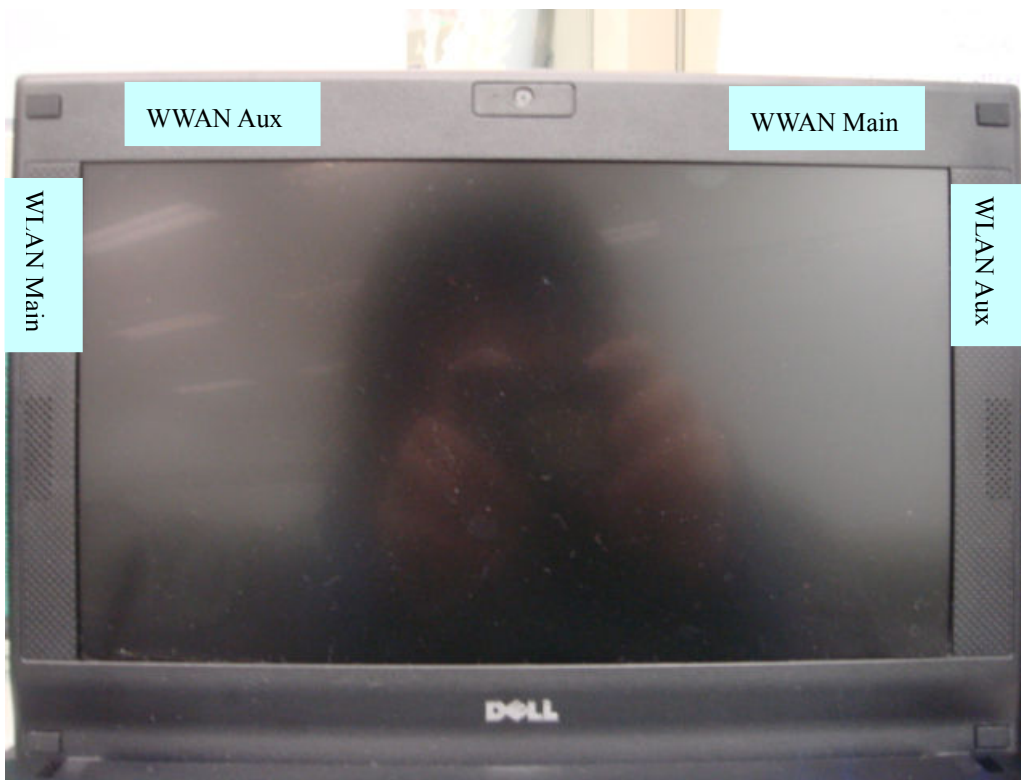


WWAN AUX Antenna Dimensioned Drawing



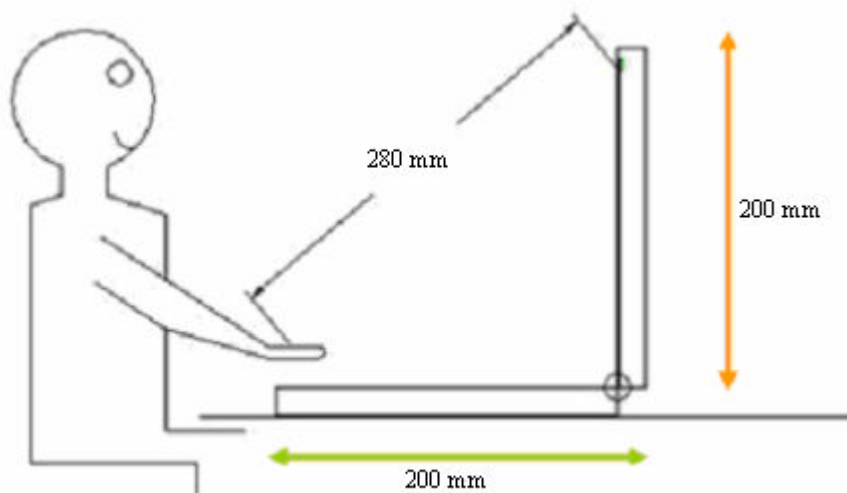
3. Antenna Host Platform Location information

Include a dimensioned drawing of WWAN Main, AUX antenna placements
Any antenna that transmits must show dimensions to bottom of laptop.



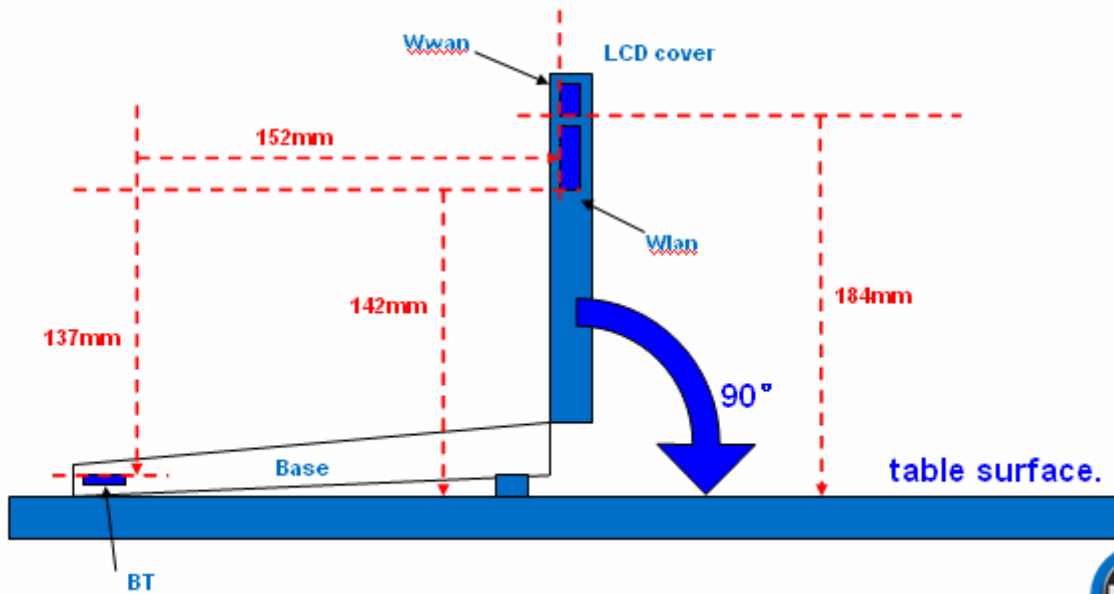
4. Antenna dimensional information for SAR evaluation

Include a dimensioned drawing showing the distance (mm) between the transmit antennas and the user (excluding hands, wrist, feet, lap/ thigh, and ankle)



Please open the LCD lid to **90°** , which is perpendicular to the table surface.

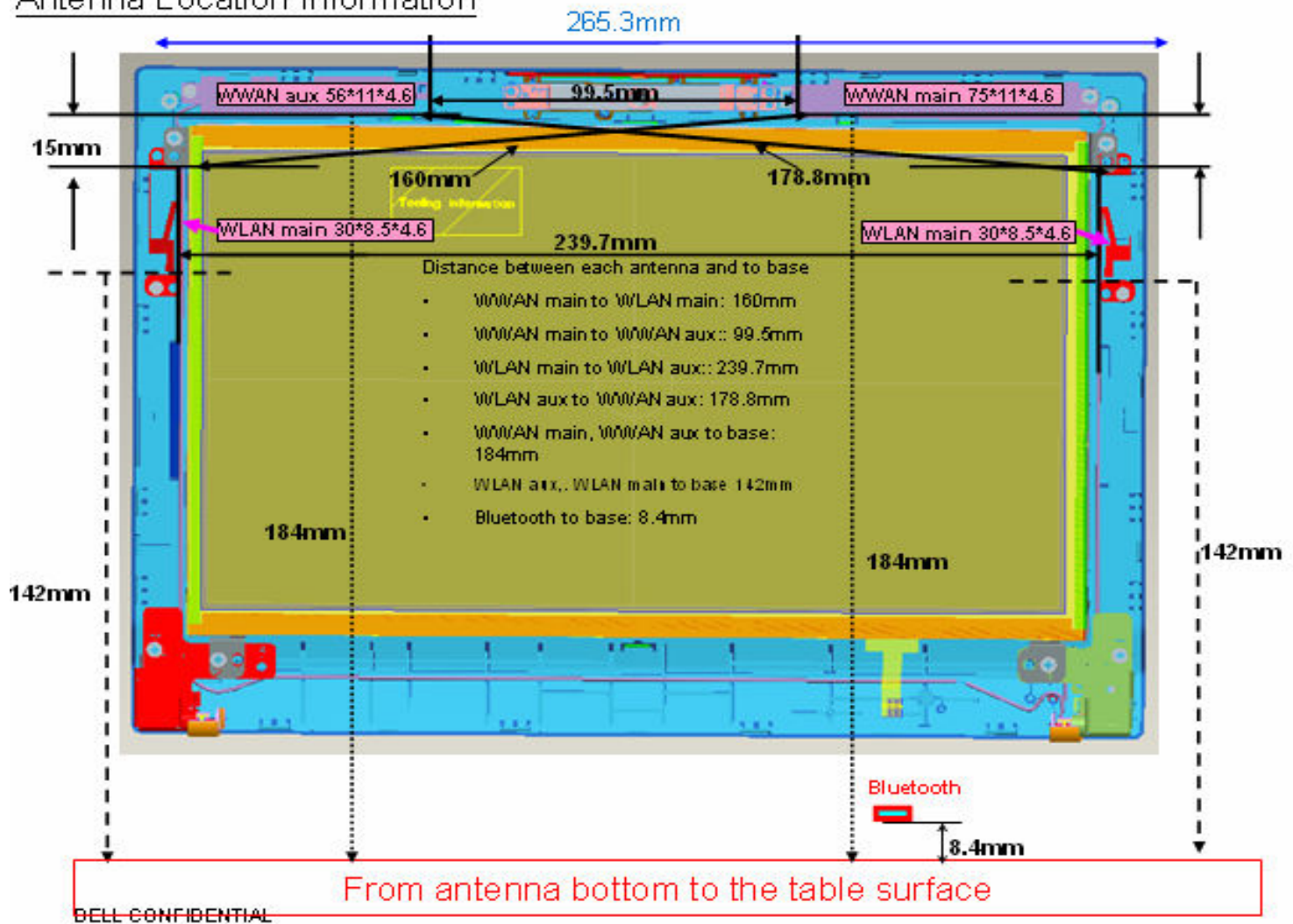
Then do those measurements.



5. Diagram of Co-Location Antenna Separation

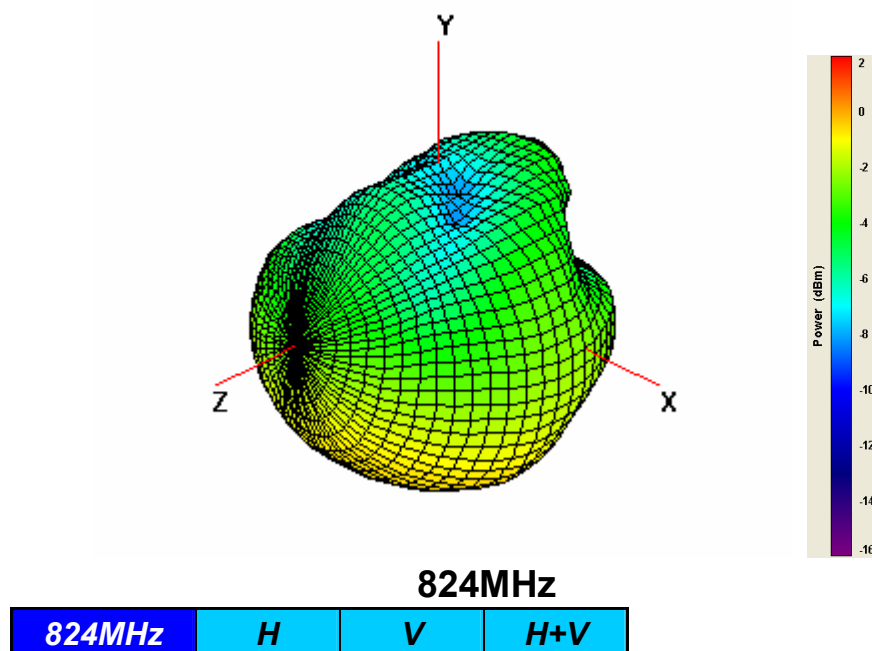
Include a dimensioned photo or dimensioned drawing showing the distance (mm) between all WLAN transmit antennas and other co-located radiator transmit antenna such as Bluetooth, WWAN,..

Antenna Location Information

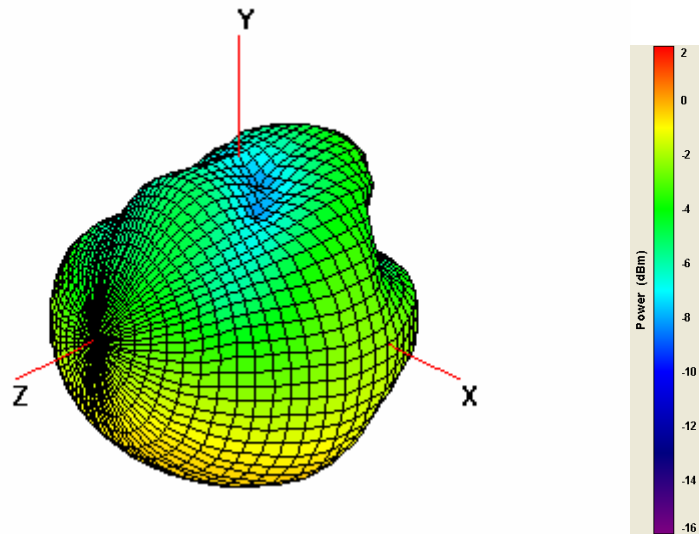


6. Antenna Gain Patterns

WWAN Main Antenna (Low Band)



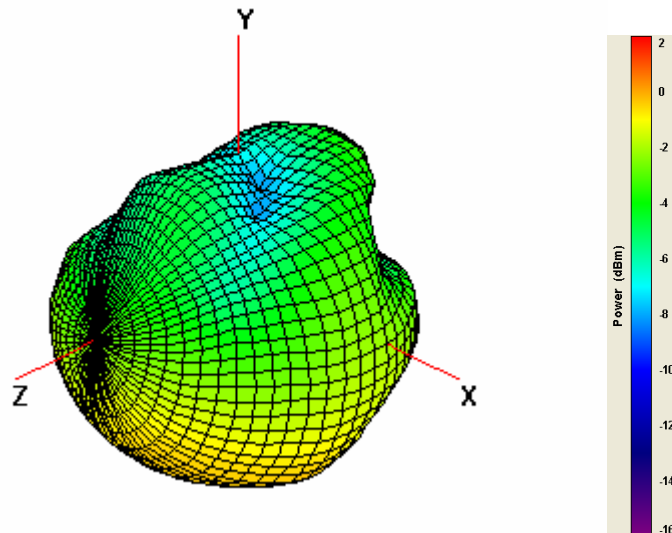
Peak Gain	0.37	-0.13	1.03
Avg. Gain	-6.85	-5.79	-3.28



830MHz

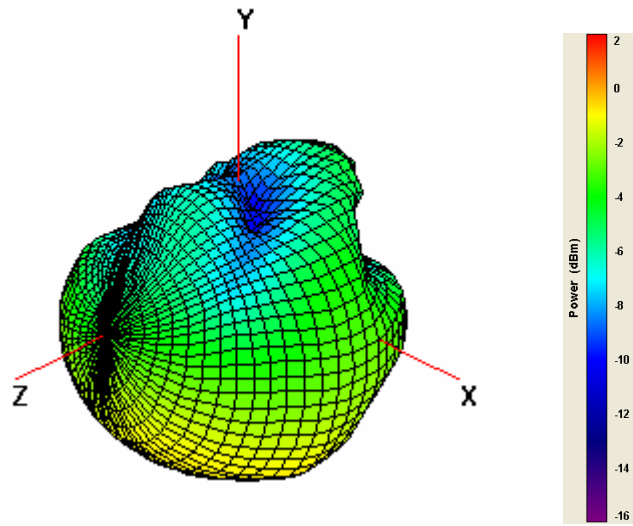
830MHz	H	V	H+V
Peak Gain	0.66	0.17	1.27
Avg. Gain	-6.57	-5.59	-3.04

WWAN Main Antenna (Low Band)



835MHz

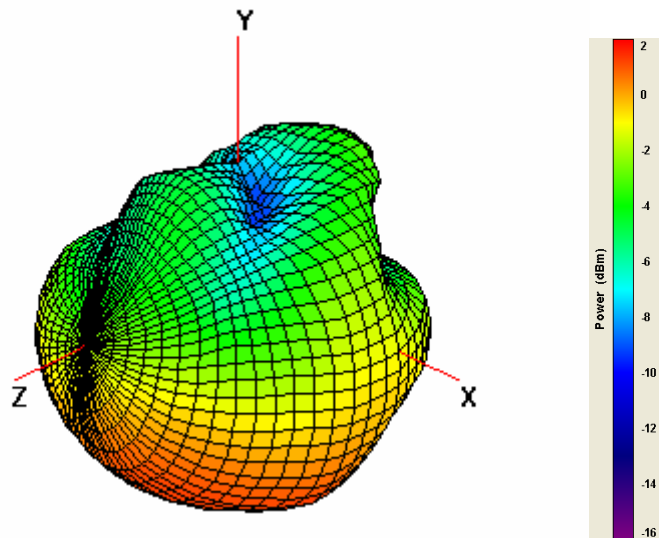
835MHz	H	V	H+V
Peak Gain	0.75	0.30	1.35
Avg. Gain	-6.48	-5.54	-2.98



836MHz

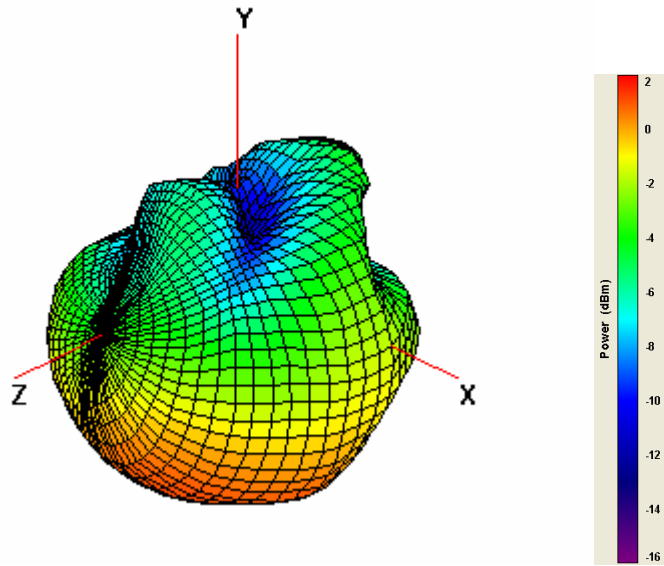
836MHz	H	V	H+V
Peak Gain	0.78	0.33	1.35
Avg. Gain	-6.45	-5.53	-2.96

WWAN Main Antenna (Low Band)



840MHz

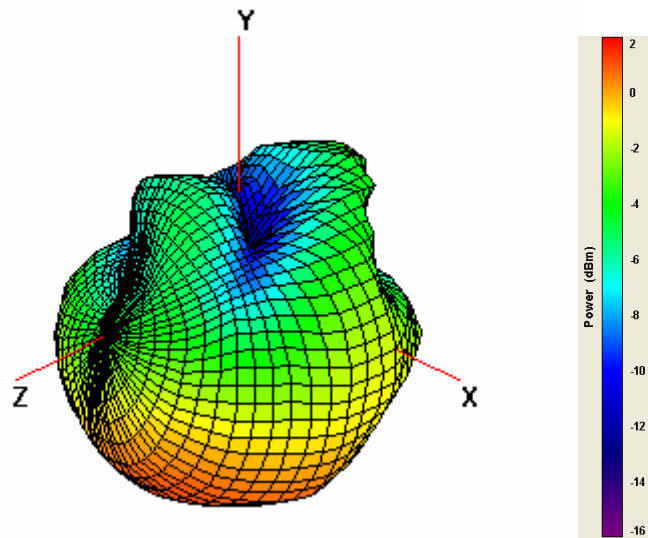
840MHz	H	V	H+V
Peak Gain	0.80	0.33	1.31
Avg. Gain	-6.45	-5.57	-2.98



849MHz

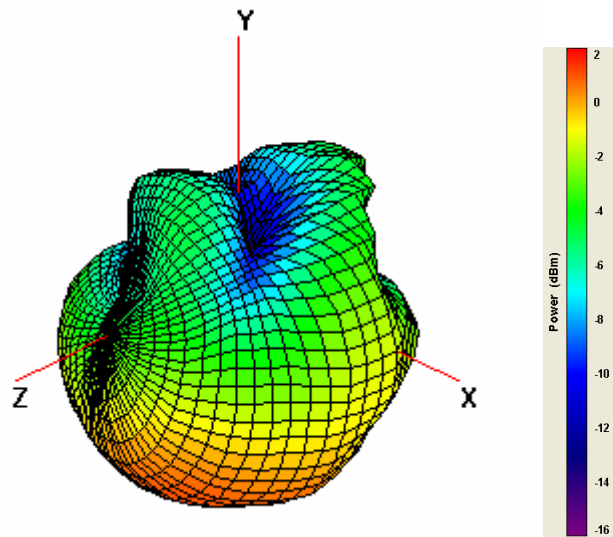
849MHz	H	V	H+V
Peak Gain	0.82	0.18	1.16
Avg. Gain	-6.45	-5.77	-3.09

WWAN Main Antenna (Low Band)



860MHz

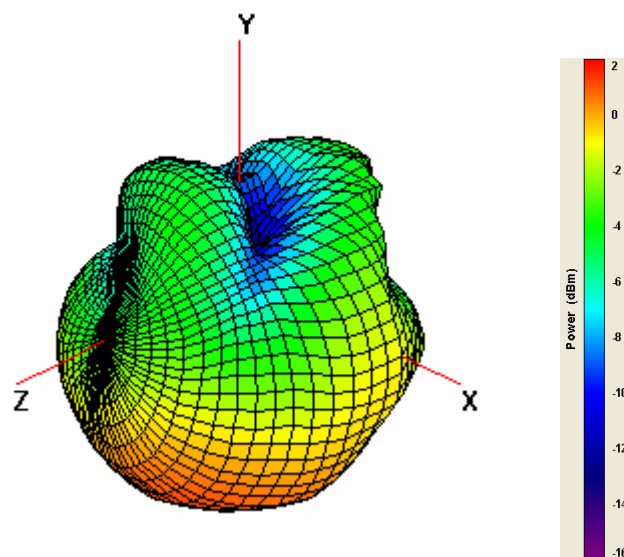
860MHz	H	V	H+V
Peak Gain	0.87	0.08	1.17
Avg. Gain	-6.48	-6.03	-3.24



865MHz

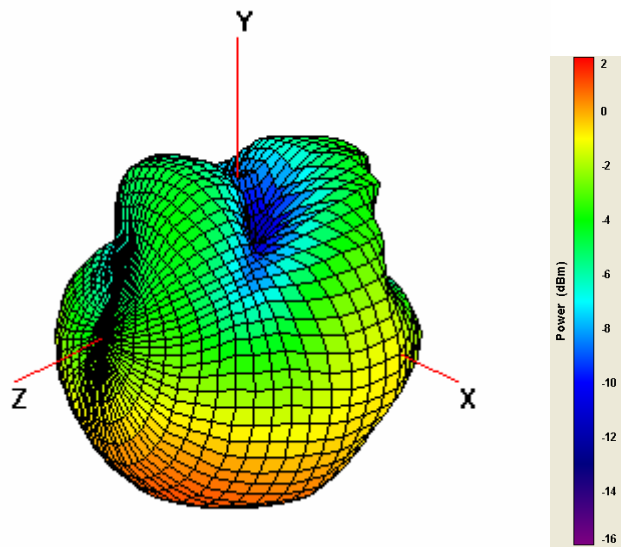
865MHz	H	V	H+V
Peak Gain	0.85	0.01	1.16
Avg. Gain	-6.50	-6.15	-3.31

WWAN Main Antenna (Low Band)



869MHz

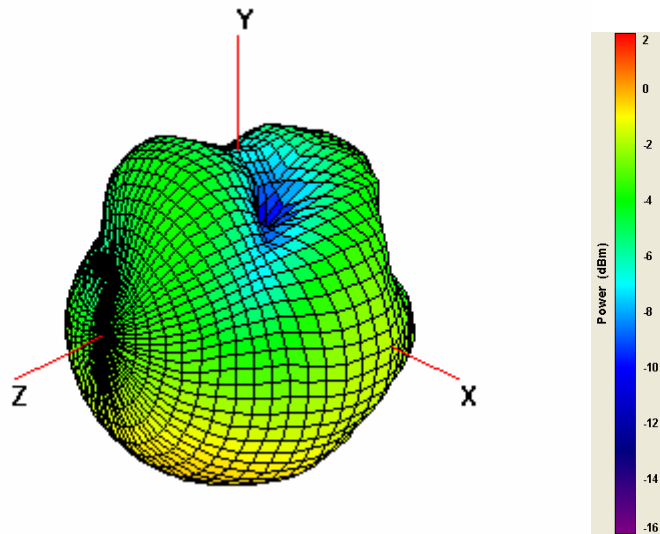
869MHz	H	V	H+V
Peak Gain	0.80	-0.04	1.12
Avg. Gain	-6.54	-6.24	-3.38



870MHz

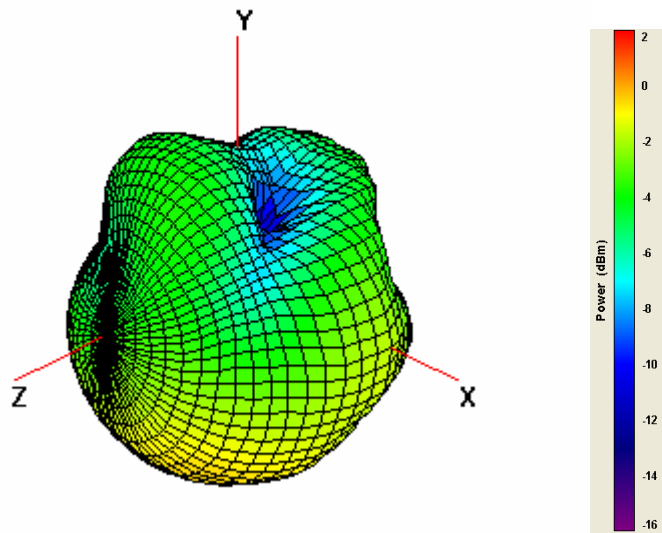
870MHz	H	V	H+V
Peak Gain	0.77	-0.07	1.11
Avg. Gain	-6.56	-6.28	-3.41

WWAN Main Antenna (Low Band)



875MHz

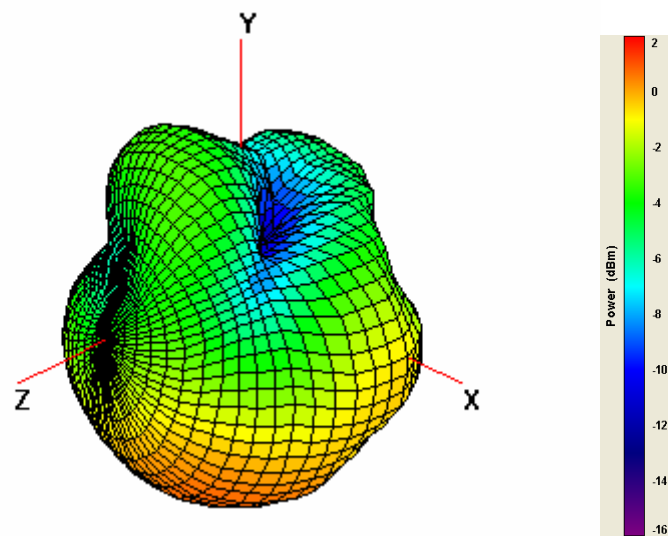
875MHz	H	V	H+V
Peak Gain	0.67	-0.17	1.04
Avg. Gain	-6.61	-6.41	-3.50



880MHz

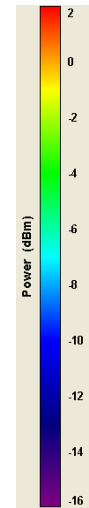
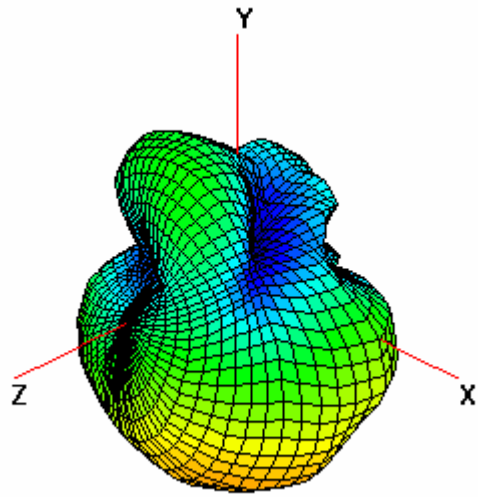
880MHz	H	V	H+V
Peak Gain	0.37	-0.41	0.85
Avg. Gain	-6.76	-6.64	-3.69

WWAN Main Antenna (Low Band)



885MHz

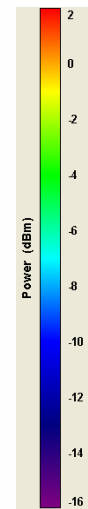
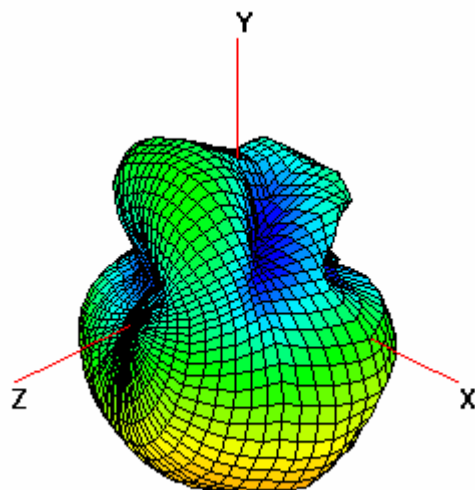
885MHz	H	V	H+V
Peak Gain	-0.09	-0.71	0.59
Avg. Gain	-6.95	-6.91	-3.92



894MHz

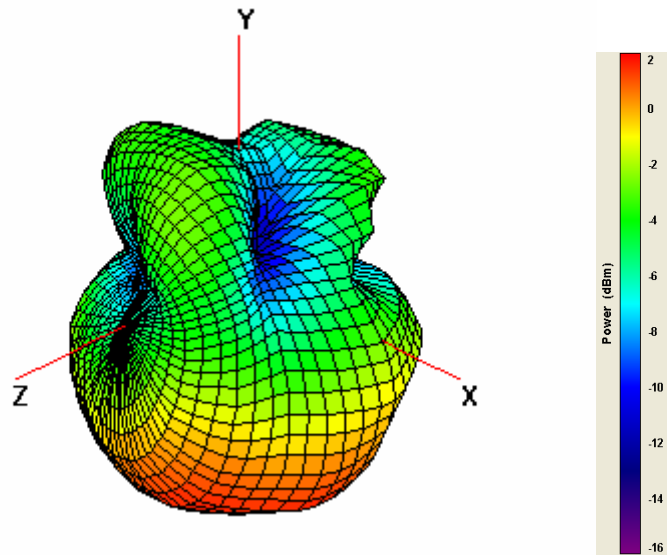
894MHz	H	V	H+V
Peak Gain	-0.85	-0.85	0.37
Avg. Gain	-7.19	-6.89	-4.03

WWAN Main Antenna (Low Band)



900MHz

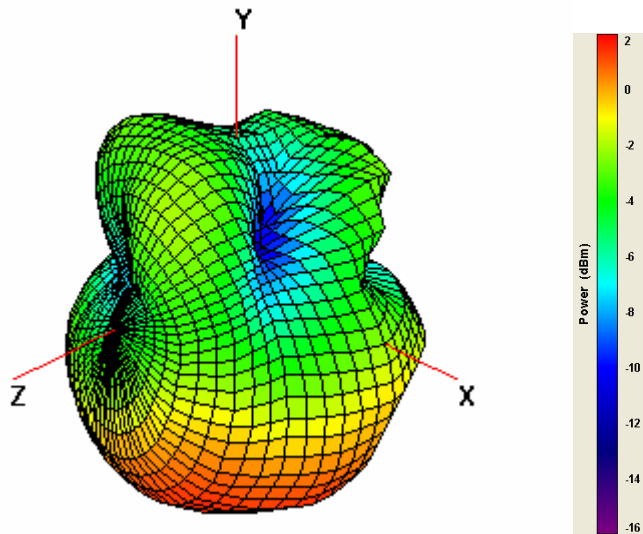
900MHz	H	V	H+V
Peak Gain	-0.76	-0.73	0.34
Avg. Gain	-7.20	-6.73	-3.95



915MHz

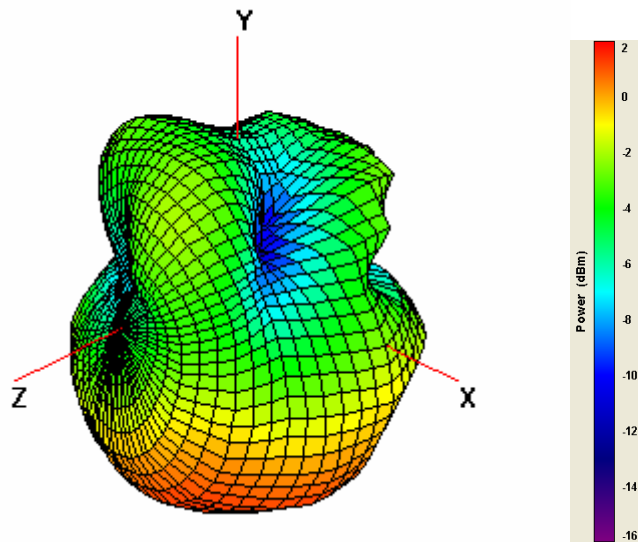
915MHz	H	V	H+V
Peak Gain	-0.73	-0.88	-0.15
Avg. Gain	-7.32	-6.95	-4.12

WWAN Main Antenna (Low Band)



920MHz

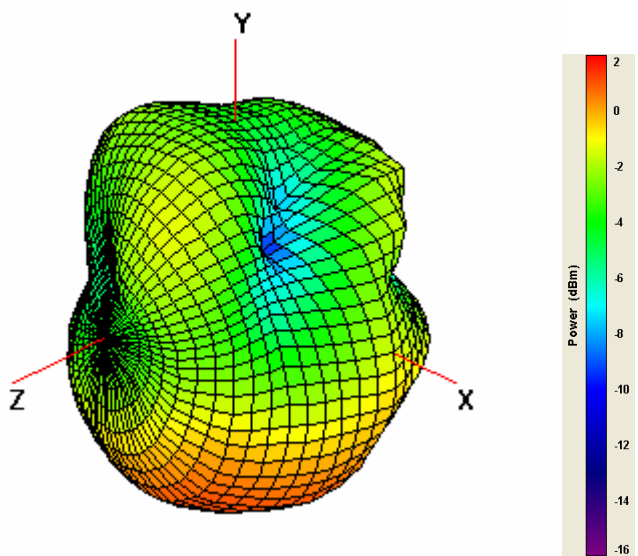
920MHz	H	V	H+V
Peak Gain	-0.84	-1.01	-0.34
Avg. Gain	-7.32	-6.95	-4.12



925MHz

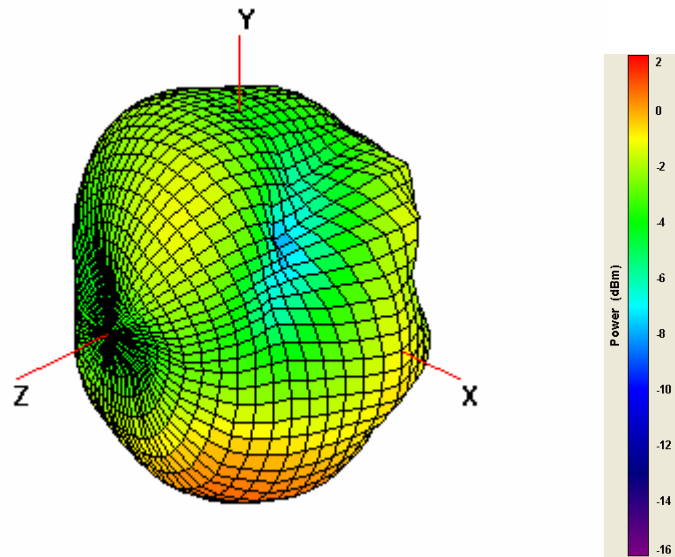
925MHz	H	V	H+V
Peak Gain	-0.93	-1.16	-0.49
Avg. Gain	-7.42	-7.24	-4.32

WWAN Main Antenna (Low Band)



940MHz

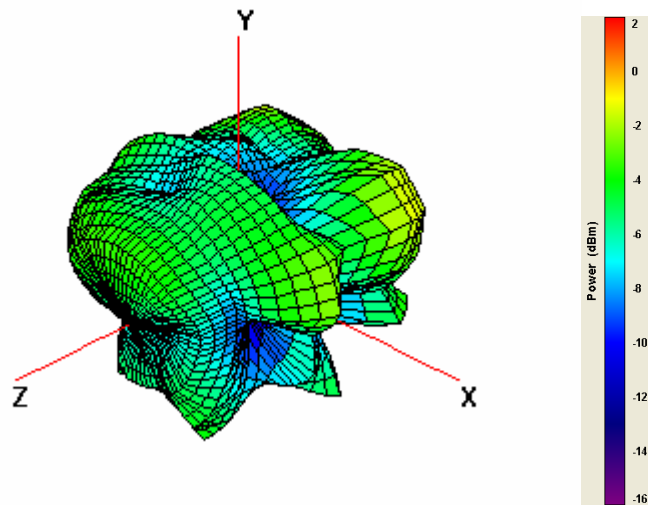
940MHz	H	V	H+V
Peak Gain	-1.17	-1.59	-0.95
Avg. Gain	-7.58	-7.64	-4.60



960MHz

960MHz	H	V	H+V
Peak Gain	-1.87	-2.22	-1.23
Avg. Gain	-7.78	-7.76	-4.76

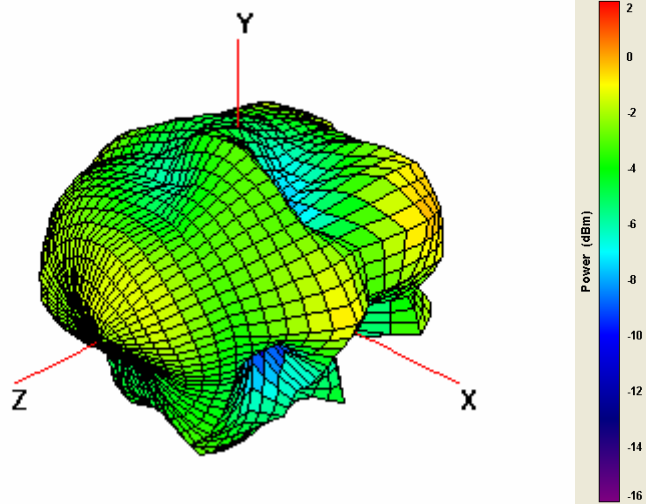
WWAN Main Antenna (High Band)



1710MHz

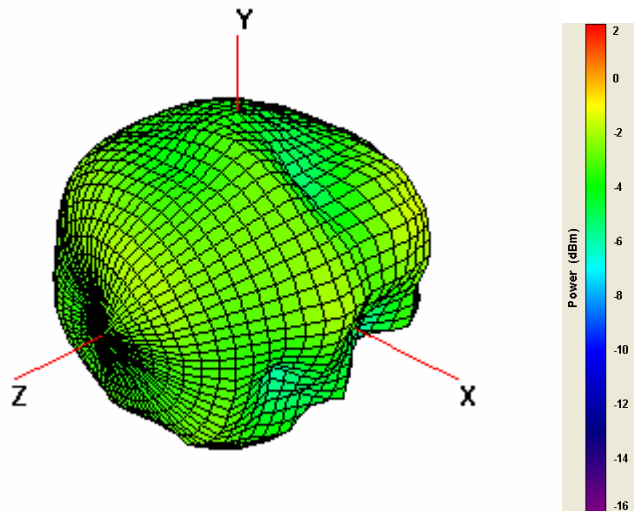
1710MHz	H	V	H+V
Peak Gain	-2.32	-1.30	0.39
Avg. Gain	-7.17	-6.80	-3.97

WWAN Main Antenna (High Band)



1750MHz

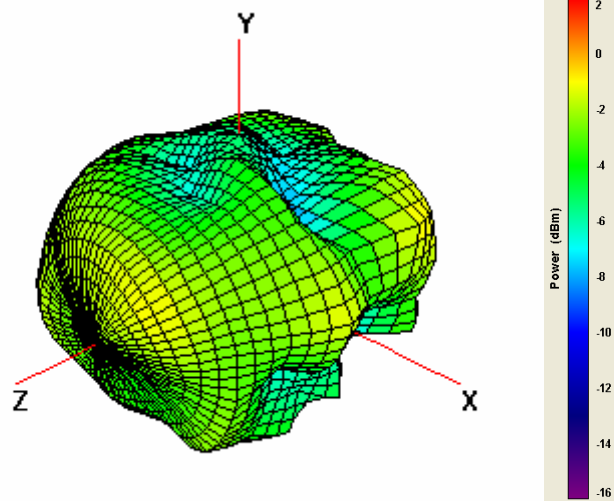
1750MHz	H	V	H+V
Peak Gain	-1.71	-1.05	0.84
Avg. Gain	-6.95	-6.58	-3.75



1785MHz

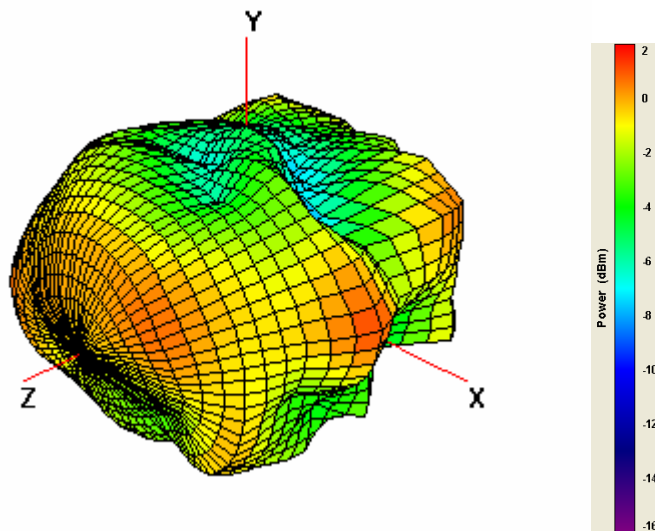
1785MHz	H	V	H+V
Peak Gain	-2.13	-1.59	0.39
Avg. Gain	-7.01	-6.91	-3.95

WWAN Main Antenna (High Band)



1805MHz

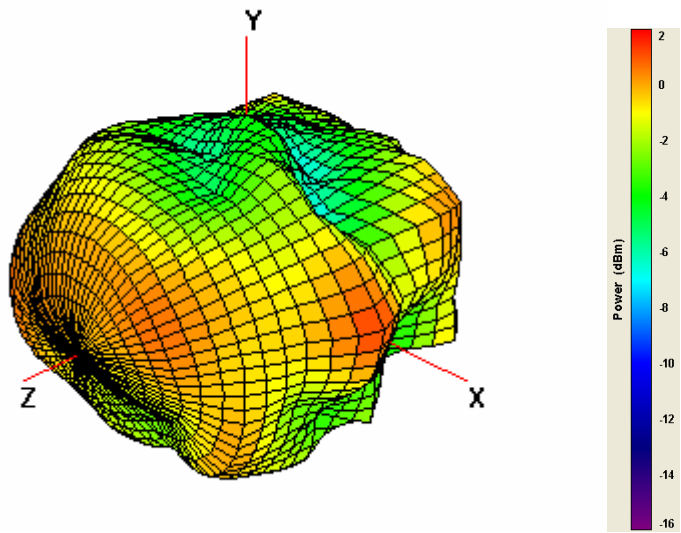
1805MHz	H	V	H+V
Peak Gain	-2.07	-2.04	0.24
Avg. Gain	-7.08	-6.67	-3.86



1840MHz

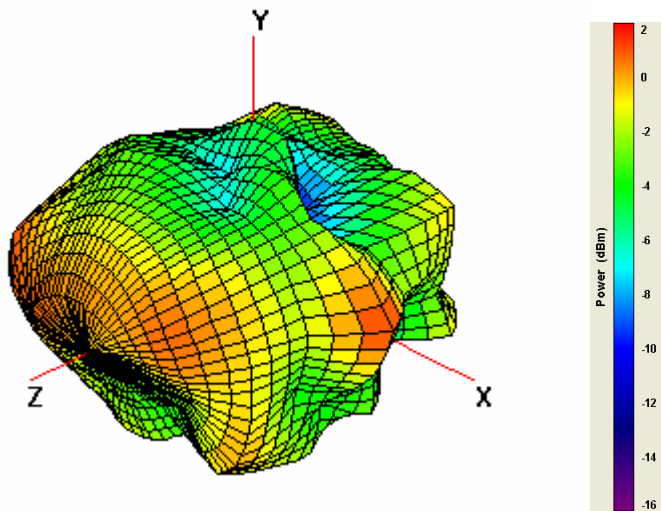
1840MHz	H	V	H+V
Peak Gain	-1.75	-1.43	-0.06
Avg. Gain	-7.12	-6.56	-3.82

WWAN Main Antenna (High Band)



1850MHz

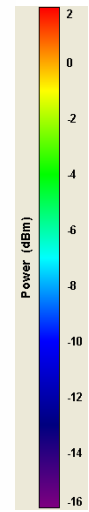
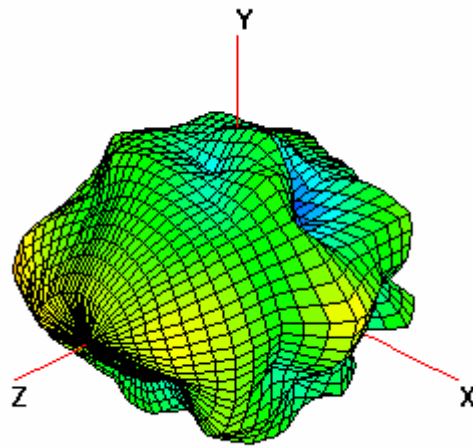
1850MHz	H	V	H+V
Peak Gain	-1.87	-1.39	-0.34
Avg. Gain	-7.26	-6.54	-3.87



1880MHz

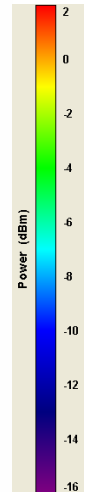
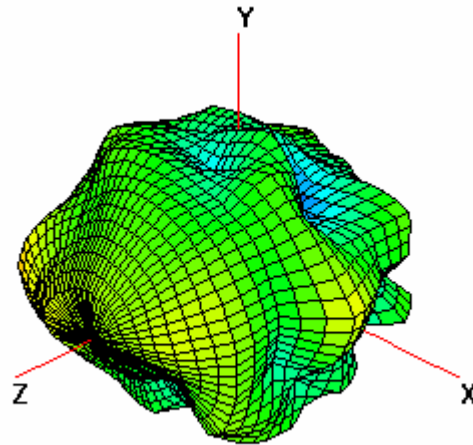
1880MHz	H	V	H+V
Peak Gain	-1.28	-0.61	-0.05
Avg. Gain	-7.35	-6.08	-3.66

WWAN Main Antenna (High Band)



1910MHz

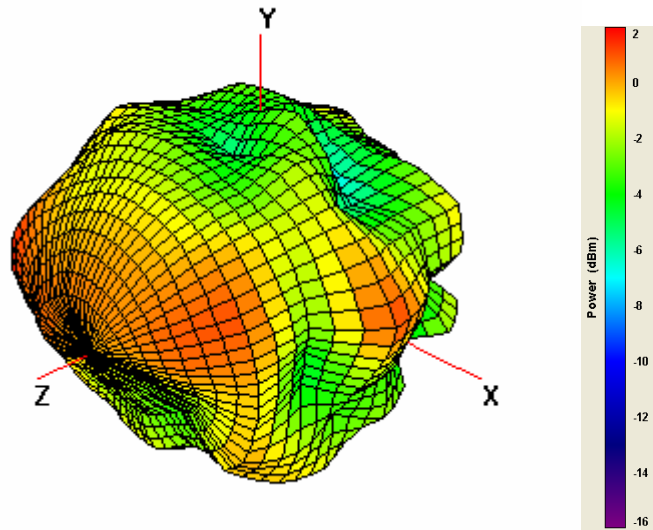
1910MHz	H	V	H+V
Peak Gain	-1.26	0.08	0.42
Avg. Gain	-7.41	-5.61	-3.40



1920MHz

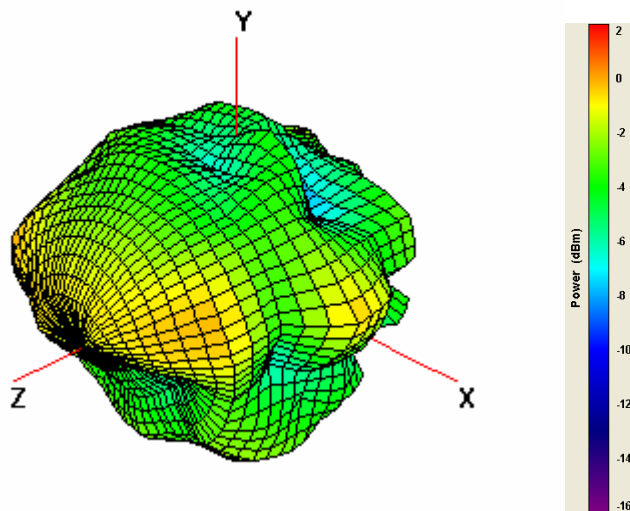
1920MHz	H	V	H+V
Peak Gain	-1.59	-0.15	0.18
Avg. Gain	-7.46	-5.53	-3.38

WWAN Main Antenna (High Band)



1930MHz

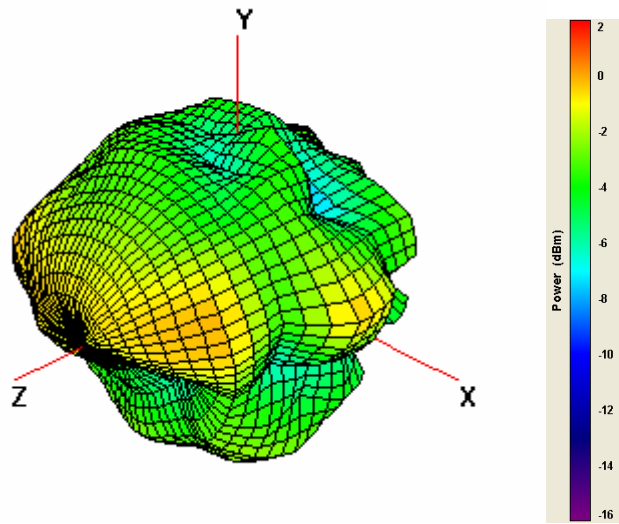
1930MHz	H	V	H+V
Peak Gain	1.33	-0.42	-0.08
Avg. Gain	-7.52	-5.51	-3.39



1950MHz

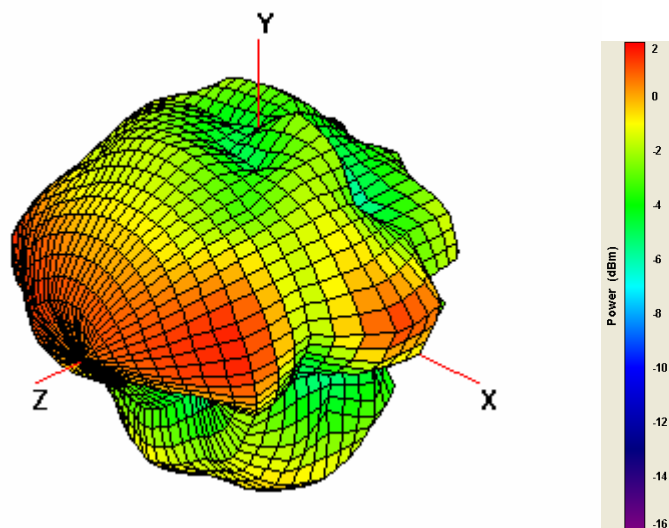
1950MHz	H	V	H+V
Peak Gain	-0.79	-0.23	0.19
Avg. Gain	-7.45	-5.42	-3.31

WWAN Main Antenna (High Band)



1960MHz

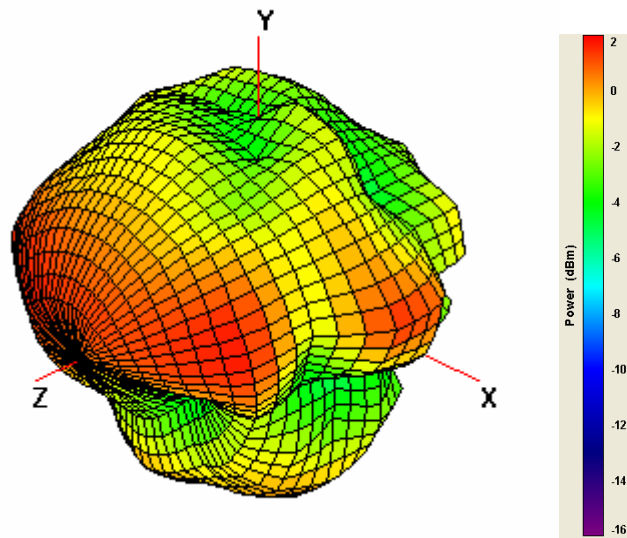
1960MHz	H	V	H+V
Peak Gain	-0.72	-0.21	0.18
Avg. Gain	-7.35	-5.40	-3.25



1980MHz

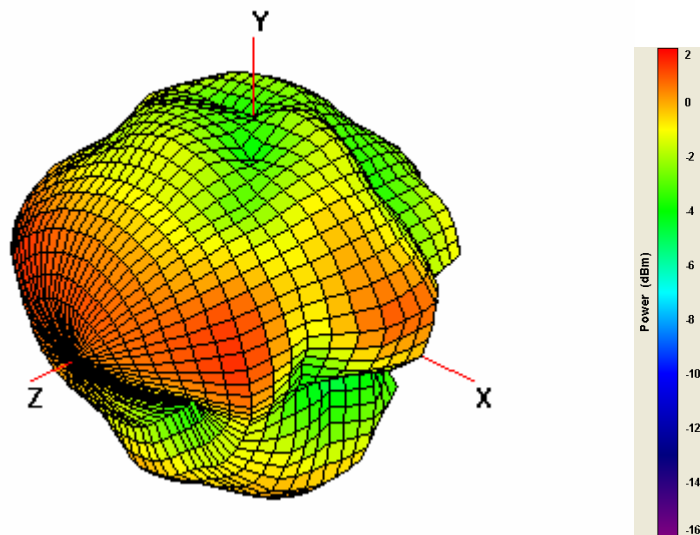
1980MHz	H	V	H+V
Peak Gain	-0.85	-0.53	-0.21
Avg. Gain	-7.36	-5.57	-3.36

WWAN Main Antenna (High Band)



1990MHz

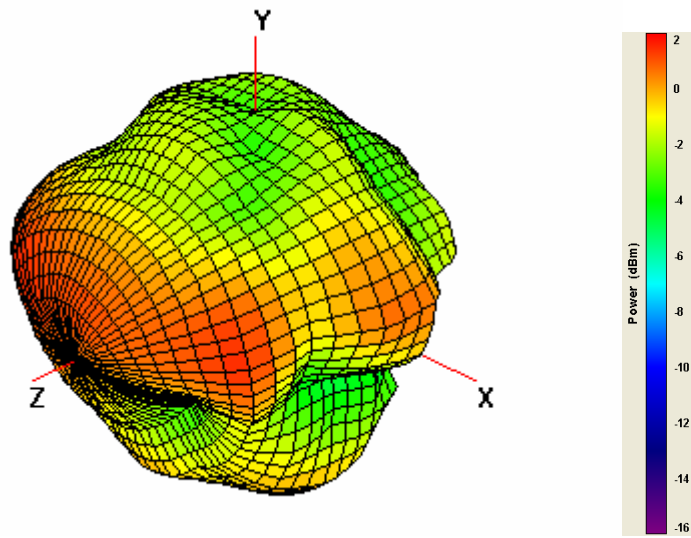
1990MHz	H	V	H+V
Peak Gain	-0.65	-0.44	-0.18
Avg. Gain	-7.04	-5.55	-3.22



2010MHz

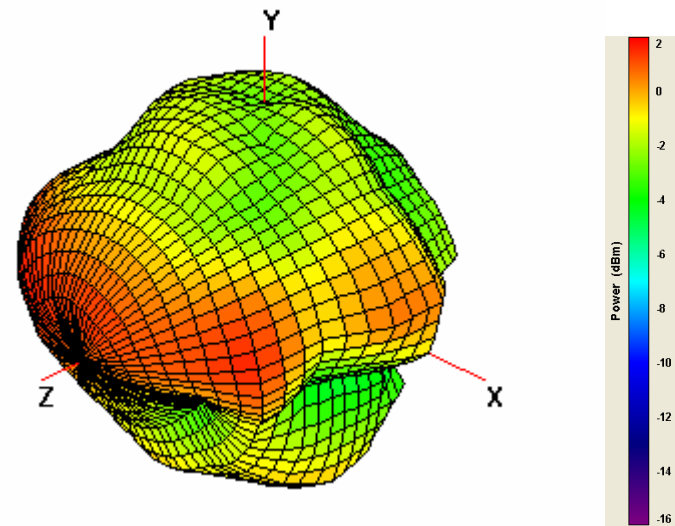
2010MHz	H	V	H+V
Peak Gain	-0.92	-0.61	-0.40
Avg. Gain	-7.41	-5.82	-3.53

WWAN Main Antenna (High Band)



2018MHz

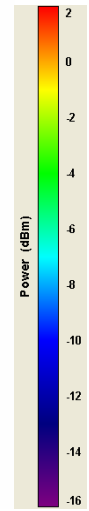
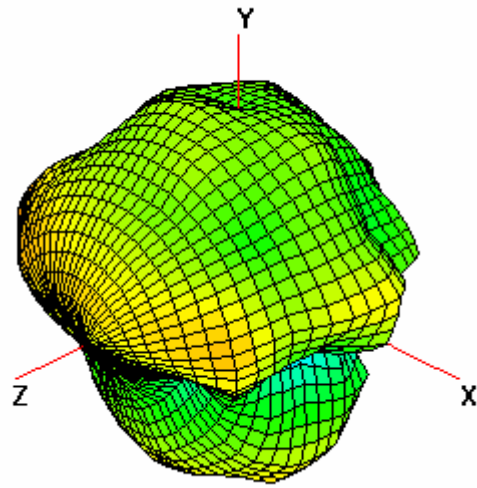
2018MHz	H	V	H+V
Peak Gain	-0.83	-0.57	-0.31
Avg. Gain	-7.67	-5.87	-3.67



2025MHz

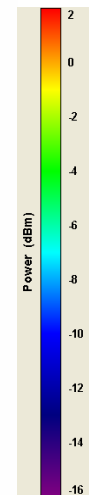
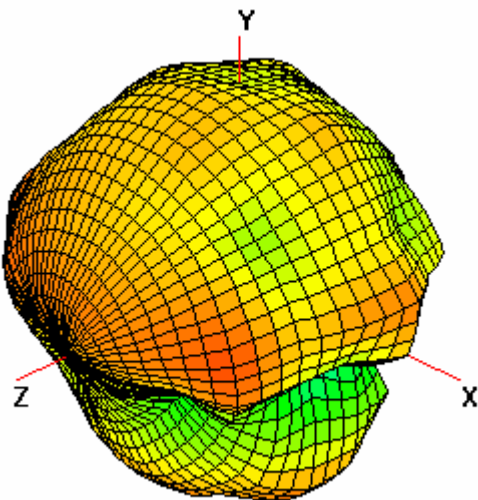
2025MHz	H	V	H+V
Peak Gain	-0.69	-0.47	-0.16
Avg. Gain	-7.98	-5.91	-3.81

WWAN Main Antenna (High Band)



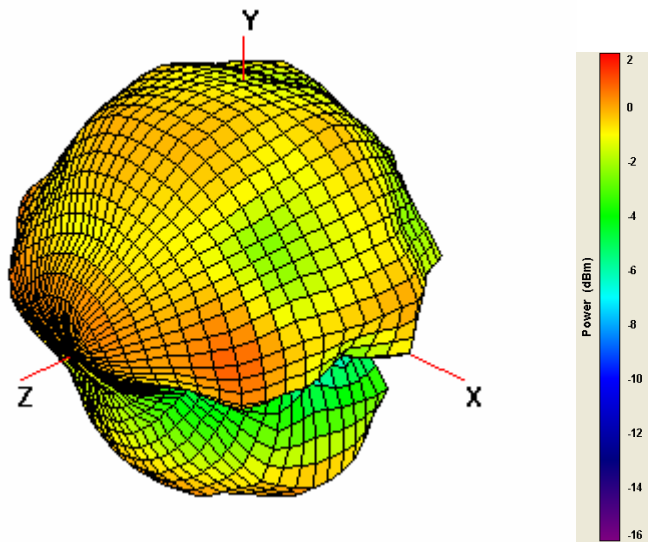
2110MHz

2110MHz	<i>H</i>	<i>V</i>	<i>H+V</i>
Peak Gain	-0.92	-0.52	0.62
Avg. Gain	-7.23	-6.12	-3.63



2140MHz

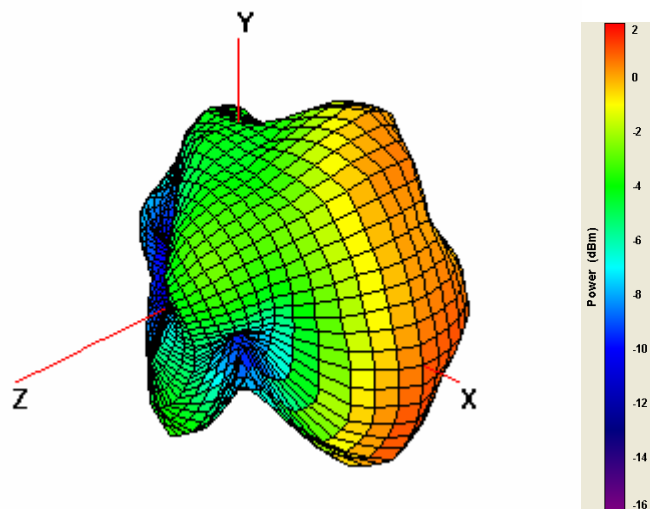
2140MHz	<i>H</i>	<i>V</i>	<i>H+V</i>
Peak Gain	-1.44	-1.33	-0.33
Avg. Gain	-7.77	-6.60	-4.13



2170MHz

2170MHz	H	V	H+V
Peak Gain	-1.54	-1.57	-1.08
Avg. Gain	-8.22	-6.84	-4.47

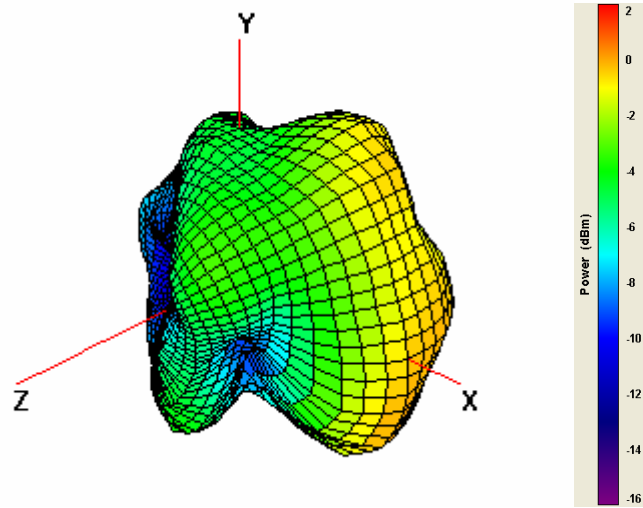
WWAN AUX Antenna (Low Band)



869MHz

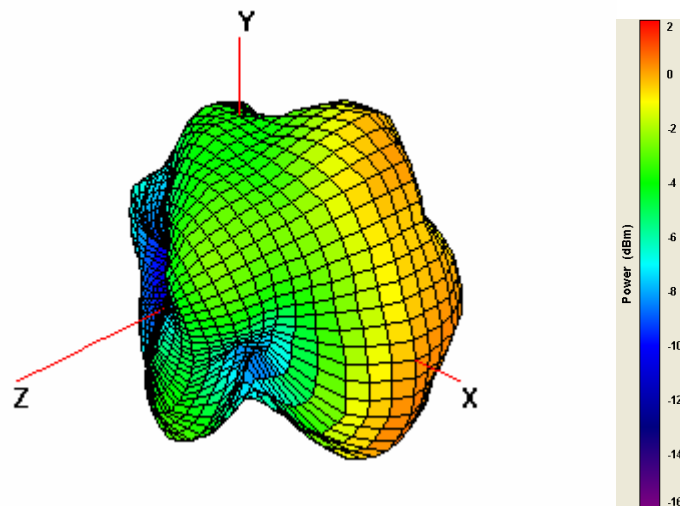
869MHz	H	V	H+V
Peak Gain	-3.57	-4.57	-2.46
Avg. Gain	-8.56	-10.34	-6.35

WWAN AUX Antenna (Low Band)



875MHz

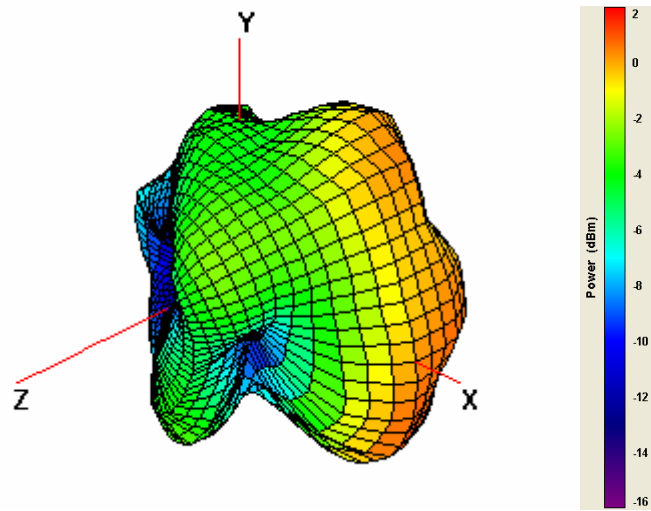
875MHz	H	V	H+V
Peak Gain	-2.73	-3.69	-1.55
Avg. Gain	-7.66	-9.42	-5.44



880MHz

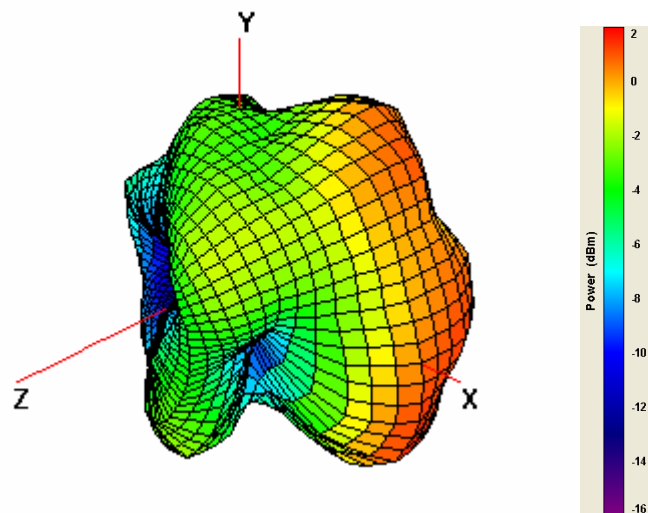
880MHz	H	V	H+V
Peak Gain	-2.21	-3.14	-0.94
Avg. Gain	-7.10	-8.83	-4.87

WWAN AUX Antenna (Low Band)



885MHz

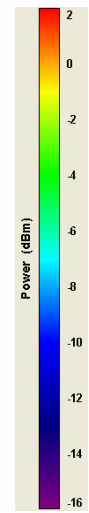
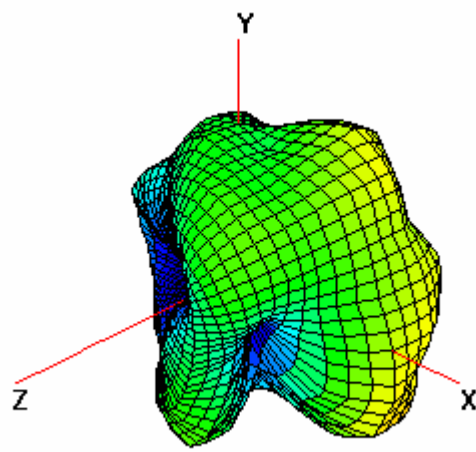
885MHz	H	V	H+V
Peak Gain	-1.81	-2.76	-0.49
Avg. Gain	-6.68	-8.41	-4.45



894MHz

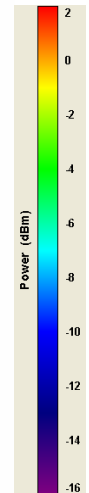
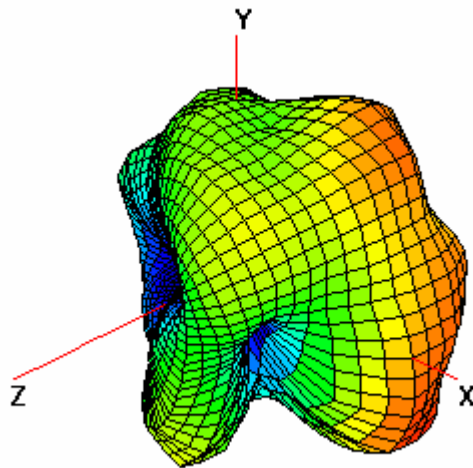
894MHz	H	V	H+V
Peak Gain	-1.41	-2.26	-0.04
Avg. Gain	-6.20	-7.93	-3.97

WWAN AUX Antenna (Low Band)



915MHz

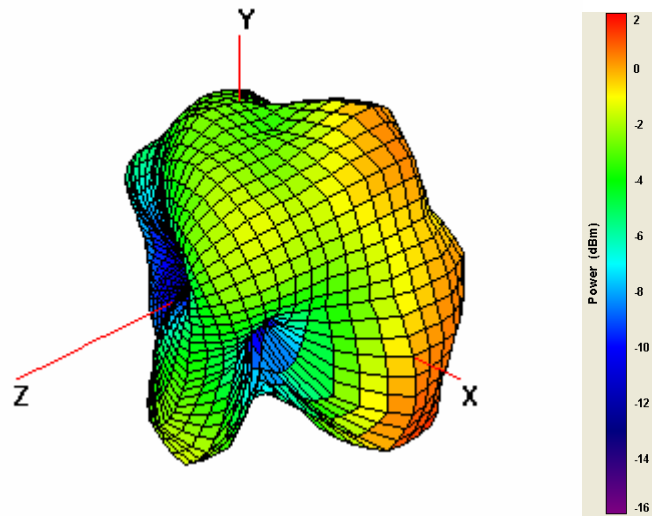
915MHz	H	V	H+V
Peak Gain	-1.36	-1.89	0.06
Avg. Gain	-6.02	-7.89	-3.85



920MHz

920MHz	H	V	H+V
Peak Gain	-1.53	-1.98	-0.04
Avg. Gain	-6.17	-8.11	-4.02

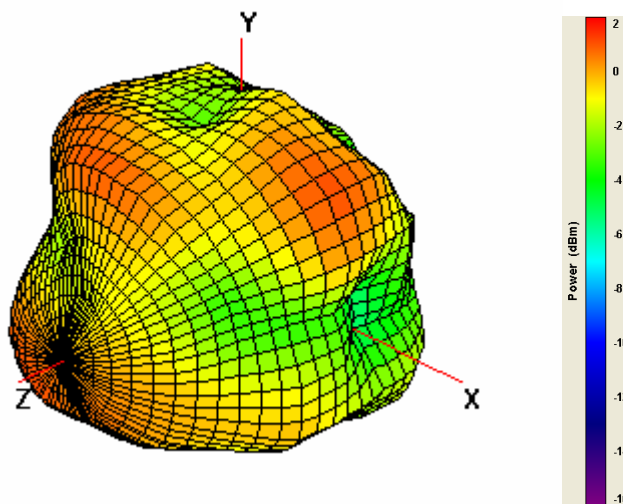
WWAN AUX Antenna (Low Band)



925MHz

925MHz	H	V	H+V
Peak Gain	-1.78	-2.14	-0.16
Avg. Gain	-6.33	-8.37	-4.22

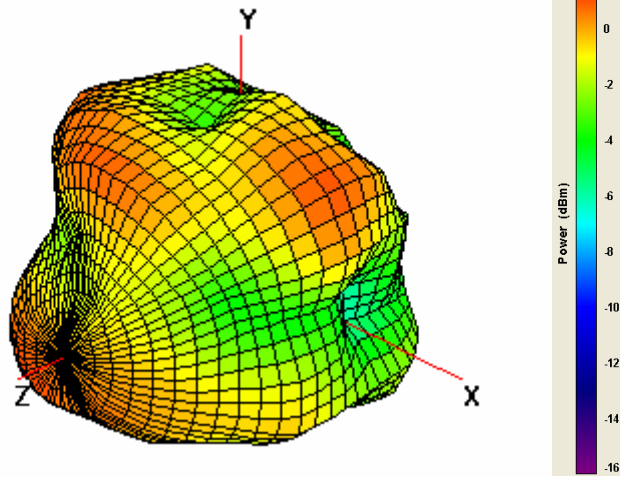
WWAN AUX Antenna (High Band)



1570MHz

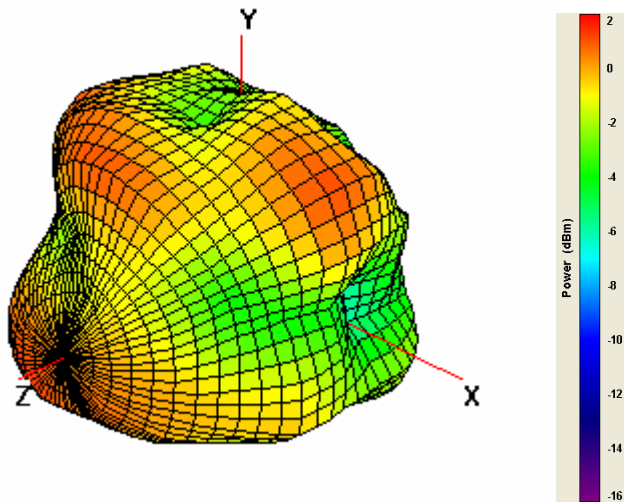
1570MHz	H	V	H+V
Peak Gain	1.00	0.70	1.20
Avg. Gain	-6.56	-4.69	-2.52

WWAN AUX Antenna (High Band)



1575MHz

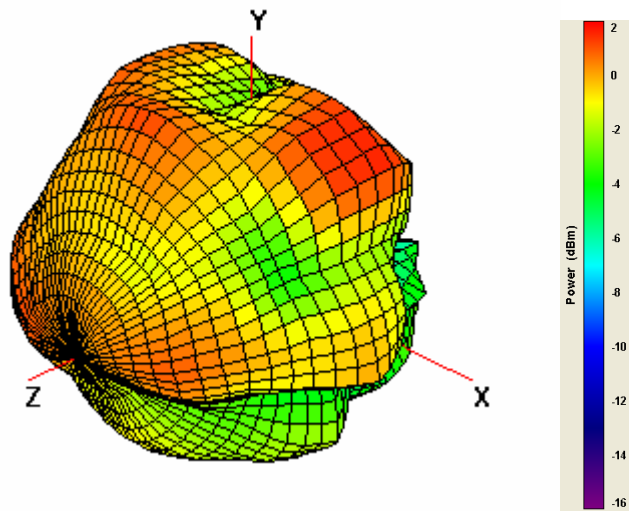
1575MHz	H	V	H+V
Peak Gain	1.10	0.80	1.28
Avg. Gain	-6.57	-4.67	-2.51



1580MHz

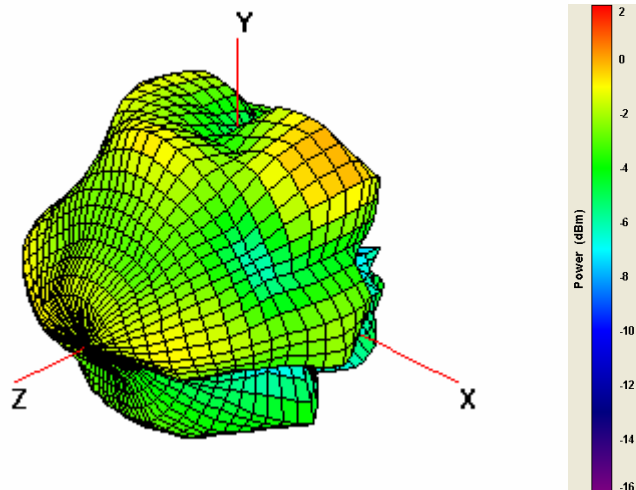
1580MHz	H	V	H+V
Peak Gain	1.17	0.93	1.40
Avg. Gain	-6.57	-4.63	-2.48

WWAN AUX Antenna (High Band)



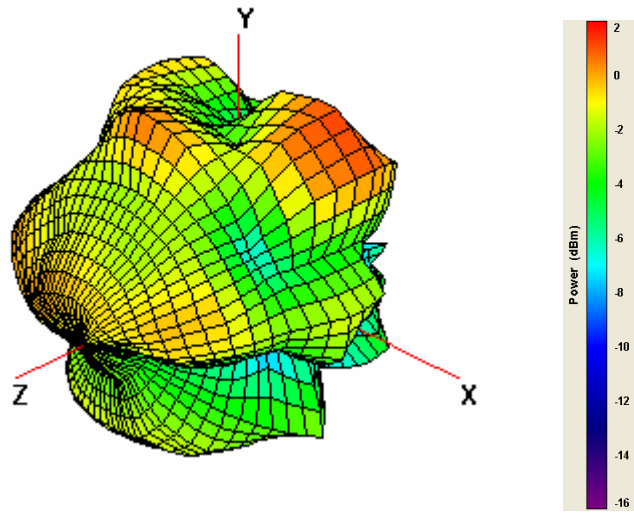
1930MHz

1930MHz	<i>H</i>	<i>V</i>	<i>H+V</i>
Peak Gain	-2.68	-2.38	-2.32
Avg. Gain	-10.62	-8.45	-6.39



1960MHz

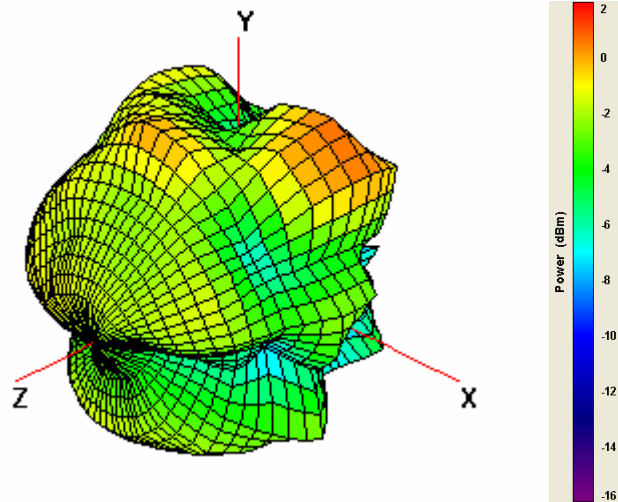
1960MHz	<i>H</i>	<i>V</i>	<i>H+V</i>
Peak Gain	-2.33	-2.44	-1.99
Avg. Gain	-10.18	-8.22	-6.08



1990MHz

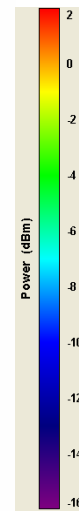
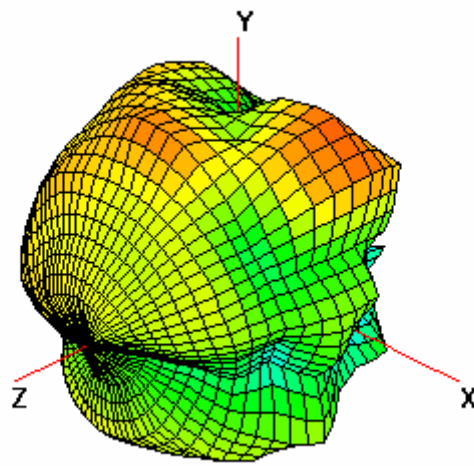
1990MHz	H	V	H+V
Peak Gain	-2.68	-3.34	-2.48
Avg. Gain	-10.21	-8.84	-6.46

WWAN AUX Antenna (High Band)



2010MHz

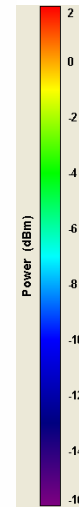
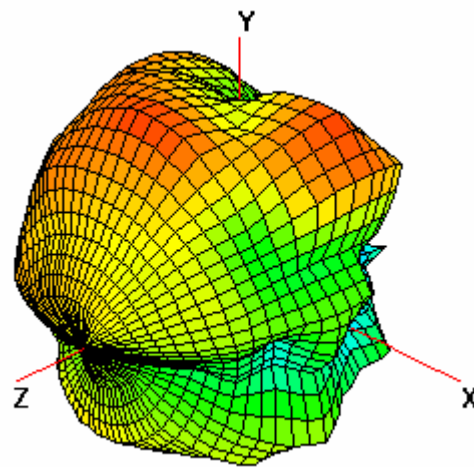
2010MHz	H	V	H+V
Peak Gain	-3.22	-3.62	-2.86
Avg. Gain	-10.45	-9.31	-6.83



2018MHz

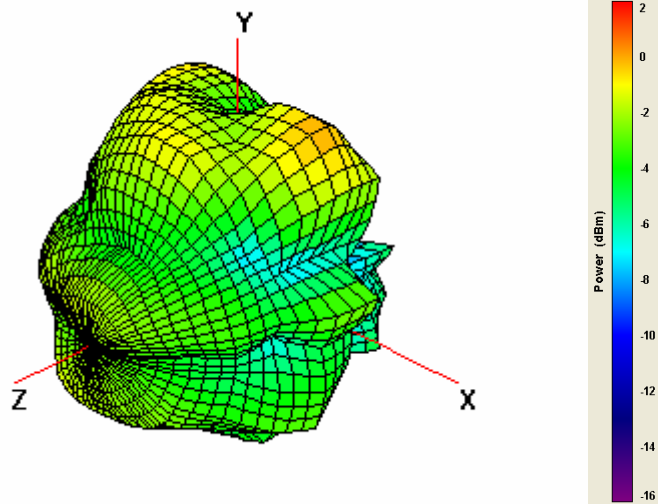
2018MHz	H	V	H+V
Peak Gain	-3.09	-3.67	-2.82
Avg. Gain	-10.44	-9.48	-6.92

WWAN AUX Antenna (High Band)



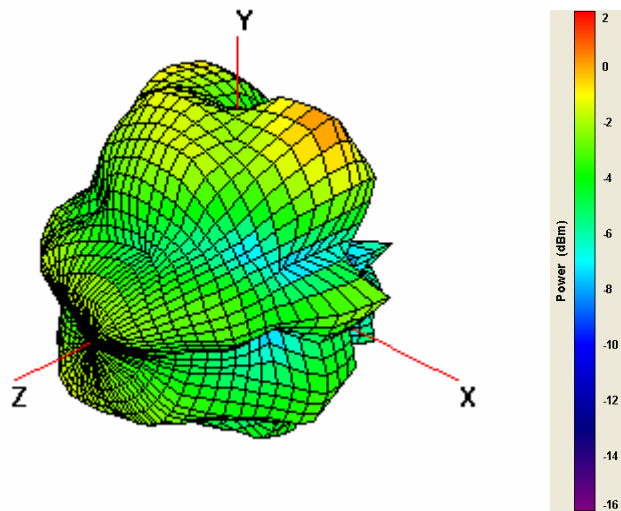
2025MHz

2025MHz	H	V	H+V
Peak Gain	-2.41	-3.62	-2.38
Avg. Gain	-10.12	-9.38	-6.72



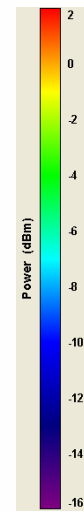
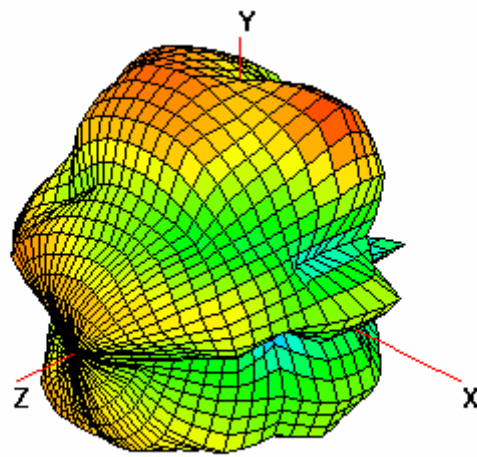
2110MHz

2110MHz	<i>H</i>	<i>V</i>	<i>H+V</i>
Peak Gain	-3.15	-3.30	-1.86
Avg. Gain	-9.84	-9.47	-6.64



2140MHz

2140MHz	<i>H</i>	<i>V</i>	<i>H+V</i>
Peak Gain	-3.58	-2.84	-1.18
Avg. Gain	-9.50	-8.90	-6.18



2170MHz

2170MHz	<i>H</i>	<i>V</i>	<i>H+V</i>
Peak Gain	-3.51	-3.83	-2.12
Avg. Gain	-10.11	-9.53	-6.80